

CLAIMS

We claim:

1 1. A scanning method for operating a scanning apparatus for optical density
2 measurement and/or color or spectral measurement of at least one measurement object
3 arranged on a printing medium, comprising
4 detecting a position of a reference object on the printing medium; and
5 scanning the measurement object with a sensor means based on a
6 relative position of the measurement object with respect to the detected position of the
7 reference object.

1 2. The scanning method according to claim 1, wherein the sensor means is
2 moved in a translational movement thereof to scan said measurement object, sensor means
3 movement being activated responsive to a detection of the reference object.

1 3. The scanning method according to claim 2, wherein the printing medium
2 is carried on a roll, at an instant of detection of the reference object, a corresponding angle φ
3 of rotation of said roll being measured and stored.

1 4. The scanning method according to claim 3, wherein an angle-of-rotation
2 increment is calculated based on a diameter of said roll, the measured angle φ of rotation and a
3 predetermined distance running in a printing medium transport direction between the reference

4 object and the measurement object, the measurement object being scanned when said roll has
5 rotated said angle increment.

1 5. The scanning method according to claim 1, wherein scanning which is
2 activated with a time delay relative to an instant of detection of the reference object is triggered
3 in accordance with a currently determined printing medium speed and a predetermined distance
4 running in a printing medium transport direction between the reference object and the
5 measurement object.

1 6. A scanning apparatus for optical density measurement and/or color or
2 spectral measurement of a measurement object arranged on a printing medium, comprising:
3 sensor means, said sensor means including a plurality of measurement
4 heads, said printing medium having a detection object arranged thereon at a predetermined
5 distance running in a printing medium transport direction from said measurement object, at
6 least one of said measurement heads being operative to detect said reference object, remainder
7 ones of said measurement heads being activatable to detect and scan said measurement object,
8 said remainder ones of measurement heads being activated responsive to said reference object
9 detection.

10

1 7. The scanning apparatus according to claim 6, wherein said measurement
2 object is a longitudinal measurement strip disposed along a coordinate direction approximately
3 transversely of the printing medium transport direction.

1 8. The scanning apparatus according to claim 7, wherein the measurement
2 strip includes a linearly arranged chain of measurement fields thereon, said measurement fields
3 having specific color density values.

1 9. The scanning apparatus according to claim 8, wherein for detection and
2 scanning purpose, each measurement head is associated with at least one measurement section,
3 which measurement section includes measurement fields.

1 10. The scanning apparatus according to claim 9, wherein each measurement
2 section comprises two adjacent spaced apart measurement zones intervened by a narrow track.

1 11. The scanning apparatus according to claim 10, wherein the measurement
2 zones each have identically recurring sequences of color density values.

1 12. The scanning apparatus according to claim 10, wherein each
2 measurement zone has measurements fields of a same longitudinal dimension.

1 13. The scanning apparatus according to claim 11, wherein each
2 measurement zone has measurement fields of a same longitudinal dimension.

1 14. The scanning apparatus according to claim 13, wherein each
2 measurement zone includes a common number of measurement fields.

1 15. The scanning apparatus according to claim 10, wherein each
2 measurement zone has at least one minimum and one maximum color density value.

1 16. The scanning apparatus according to claim 8, wherein at least one of said
2 measurement fields comprises the reference object.

1 17. The scanning apparatus according to claim 7, wherein said measurement
2 heads are arranged one after another along said coordinate direction, the measurement heads
3 being moveable along said coordinate direction.

1 18. The scanning apparatus according to claim 17, wherein the apparatus is
2 disposed above a printing machine roll, the printing medium being carried on said roll.

1 19. The scanning apparatus according to claim 17, further comprising a slide
2 device, said measurement heads being carried on said slide device, said slide device being
3 moveable translationally along said coordinate direction.

1 20. The scanning apparatus according to claim 18, further comprising a slide
2 device, said measurement heads being carried on said slide device, said slide device being
3 moveable translationally along said coordinate direction.

1 21. The scanning apparatus according to claim 19, wherein in progressive
2 time with slide device translational movement, each measurement head scans a measurement
3 section on said measurement strip associated with said each measurement head.

1 22. The scanning apparatus according to claim 6, wherein the printing
2 medium is carried on a printing roll, said apparatus further comprising an angle measurement
3 transmitter carried on said printing roll for detecting an angle of rotation of said printing roll,
4 said transmitter being electrically operatively connected to the apparatus.

1 23. The scanning apparatus according to claim 22, further comprising a
2 control electronics unit, said control electronics unit being operative to detect a current angle of
3 rotation of said printing roll at detection of said reference object and trigger activation of

4 apparatus scanning when a predicted angle-of-rotation increment relative to that at detection is
5 reached.

1 24. The scanning apparatus according to claim 22, further comprising a
2 control electronics unit, said control electronics unit triggering activation of said scanning
3 apparatus with a predicted time-delay signal, the time delay being functionally dependent on a
4 predetermined distance between the reference object and the measurement object.
5